Processes of Mutuality

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THINK, ACT

We are at a time in the field of media art when we can look back in time to gain insight about the future. In order to define direction for a new lab such as Culture Lab, the old adage "Think Global, Act Local" rings particularly true as we try to establish ourselves on the world stage and at the same time address specific regional needs. Context has shifted over time, however, and inasmuch as there was an opportunity to create a media lab in the grand tradition of an MIT or an Ars Electronica in the north of England, the rapid democratization of technologies meant that the locus of action had shifted since the time of these references. With it comes a shift of the role and relevance of a media lab towards grassroots initiatives – those that do act locally like Medialab Prado and Kitchen Budapest.

The field of art-science is at a similar juncture. As we now coin a new phrase, "Think Art, Act Science", we can look back at our history, not just in retrospect, but to understand how context has changed and goalposts have moved. Art and science have a relationship that goes back at least 500 years to Leonardo, and just in the past 50 years tremendous levels of interchange and collaborative activity have taken place. The simple mention of the idea of interplay between art and science piques the imagination and inspires both specialist and lay-person alike. Meanwhile, throughout the course of the 20th century both art and science have been fundamentally redefined. Now firmly into the 21st, the stakes in the post-postmodern arts and an informatics driven sciences mean that the forms of mutual exchange between artists and scientists continue to evolve.

CONTEXT

If we take the half-century mark as a point of departure, any discussion of art and science brings up C. P. Snow and his 1959 Rede Lecture, "The Two Cultures". It has come to symbolize the supposed dichotomy between the humanities and the sciences. In the fifty years that has passed since, this premise has been discussed, argued, criticized, and in many ways confronted and addressed in the evolution of each respective field. Ultimately, Snow did not banish scientists and artists to different corners insomuch as bring to light the importance of considering and debating positivist versus critical views of science in society. This is precisely the debate that has since taken place with McLuhan, Kittler, Varela, and Gould, amongst others.

These debates took place not only in argument but also in action. The 1960's was the time not just of statements of possible disciplinary divides, but was also a moment marked by radical initiatives that explored amongst many other revolutionary things a potential common ground between scientific research and artistic practice. The Experiments in Art and Technology (E.A.T.) is precursor to all of today's collaborative initiatives cutting across art and technology. Engineers from Bell Labs, Billy Klüver, Fred Waldhauer and others, worked with artists including Robert Rauschenberg, Robert Whitman, and John Cage in a series of collaborations that began in 1966 with the 9 Evenings: Theatre and Engineering series at the Armory in New York and culminated at Expo '70 in Osaka. Their work set out the challenges, confronted the difficulties and saw the rewards of collaborative exploration that we continue to seek out today. The work has since been exhibited in retrospectives at NTT-ICC in Tokyo (2003) and MIT in Cambridge

Massachusetts (2006), and is now documented on a DVD series produced by Julie Martin and directed by Barbro Schultz-Lundestam.

As a student, I had had the great fortune to meet Cage during his Norton Lectures at Harvard in 1988 and then again the following year at the Cage-fest at Strathmore Hall Arts Center. Twenty years later, I was commissioned by Honor Harger of the AV Festival to recreate his Variations VII, originally staged in 1966 during the 9 Evenings. With my collaborators, :zoviet*france: and Matt Wand, we had the challenge to research the original performance conditions of this "happening" and to transpose them into a contemporary context. We faced the question of whether to mount a historical recreation of the original or to interpret the work given present day means. It was similar in some ways to the question of whether to perform Early Music on original period instruments or on a modern instrumentarium. With our decision to recreate light-sensing technologies in collaboration with a local engineer, and to use Skype and mobile phone technologies in the place of analogue landlines to listen to the city, we transposed 1966 New York to 2008 Newcastle upon Tyne. What was primordial was not the verbatim mechanics of the piece (there was no "score" but a series of notes, technical diagrams, and texts), but a faithful re-contextualization of core concepts contained in the work of presence, space, city, and electromagnetism.

PROCESS

Retracing our footsteps further back to the first half of the 20th century, it is with The Work of Art in the Age of Mechanical Reproduction that Walter Benjamin (1936) proposes a critical examination of modern technology's impact on culture. Scientists have a similar legacy in Alfred North Whitehead, whose Science in the Modern World (1925) situated science in culture, and reconsidered truisms of classical science in light of then new developments such as the theory of relativity. The interplay of objectiveness and mysticism, aura and fact were already at this time interwoven across scientific and humanities disciplines.

This way of seeing across disciplines is one where process takes on primacy above and beyond product or artefact. It is here that we see commonalities and differences in the ways that science and art each broach creative endeavor. By debating whether scientists appreciate art or whether artists understand science, we are missing the point. Instead, by looking at process, we understand the dynamics at play in the kinds of creativity that accompany diverse areas of research.

Process can be thought of as a middle layer that ties techniques (individual operations) to higher-level research method (systems and forms of procedures). In the classical sciences, research is codified in the scientific method:

- Hypothesis
- Theory
- Proof

This method defines the logic and choice of processes to be deployed in order to tackle a research question.

In art, making this kind of generalization is more difficult and risk prone. We can nonetheless

attempt to identify steps common to artistic process across a range of practices:

- Ideation
- Reflection
- Conceptualization
- Realization

While process and method can be highly idiosyncratic and difficult to generalize in the arts, it can be a useful means to describing practice. In science, while process and method are clear, discussion of practice is something that is less current. Bruno Latour in his seminal work on the place of science in society looks at the practice of science and situates scientific practice within a broader societal context. In Science in Action, he describes scientific tradition as a cultural practice and looks at social constructs that lead to the articulation of scientific principles. He then unwraps these principles and proposes an alternative, process based interpretation of the scientific canon.

Latour evokes the two faces of Janus, the god of gates, to look at tensions between the default of science-as-establishment-of-fact and emergent notions of science-as-process.

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When the machine works, people will be convinced	The machine will work when the relevant peop are convinced
When things are true, they hold	When things hold, they start becoming true

If the arguments of the left side belie the image of a fact-driven scientific pursuit, the right side of Janus shows science as an open-ended process. This process is the practice of science, and is science in action. This is the ethos that Latour proposes, an ethos where scientific practice is inextricably embedded in the society that surrounds it. This vision is ultimately very similar to visions of artistic practice as a product of and a reflection on the world around it. Methodological differences or not, here is a view that situates processes of art and processes of science within culture.

STRUCTURE

Art and science share the quality of being open-ended exploratory pursuits. In both the sciences as well in the arts, the effects of specialization stifle out of the box thinking through compartmentalization. Art and science have much to offer one another in mutual exchange, channeled through openness and curiosity. And in this, today we benefit in ways unheard of in Whitehead's or Snow's times, with structures and infrastructure that encourage curiosity driven investigation, action research, and collaborative practice.

View in context, it is likely that the division of cultures Snow observed was more a lack of mutual awareness across disciplines than an insurmountable intellectual impasse. If this is true, then part of what Snow lamented were the rigid educational pathways that trained artists and scientists in parallel but separate universes. While effective education to prepare students to be active contributors to a modern society remains a significant challenge, bold educational reforms and radical experiments have taken place throughout the 20th century. These include the recognition of cognitive equivalence of mathematics and Latin in the French system, the Liberal Arts university system in the U.S., or the recent focus on STEM (science, technology, engineering, and math) subjects in the U.K.

I am a product of the liberal arts system, having had the chance to study and gain degrees in both the physical sciences and music. These were not two things I did, it was not that I unified two cultures, rather my university encouraged this kind of broad exploration and built it into the curriculum. I am not an exception. This is not something specific or special about education at Harvard, there is a long tradition of artists/scientists across time. Just looking around at those who have inspired me include pioneers of physics and computer music like Jean-Claude Risset, artists who explore the social history of science like Paul de Marinis, and scientist-turned-artists like Natalie Jeremijenko. Interestingly, none of us operate specifically in the field of sci-art *per se*. Instead, processes of science are a natural, integrated part of the process of the artistic work that we produce.

MUTUALITY

Today's multidisciplinary world benefits from the Liberal Arts, the mainstreaming of science education, and the broadening dissemination of art practice. There are more and more artists, scientists, students, and lay people who have double (and at times triple and multifarious) backgrounds. The realists in us hesitate to evoke Leonardo – the idea of artist and scientist in one person seems too romantic, too much pressure. Yet somehow it is possible that we find ourselves today in an increasingly renaissance-like era. In the half millennium since the Renaissance, however, societal conditions have changed with fundamental questioning of authority, authorship, and the rise of large-scale forms of empowerment. Perhaps the present day Leonardo is embodied not in one person but in a group? Or in a community?

The field of art-science has exploded, and centers of interdisciplinary study and research have been established worldwide. If E.A.T. was an early initiative, today's field counts programs like Artists in Labs, collections like that of the Wellcome Trust, scholarly journals like Leonardo, galleries like Le Laboratoire, producers like Arts Catalyst, and governmental initiatives such as the joint meetings of the National Science Foundation and the National Endowment for the Arts.

Far from a separation of two cultures, we have developed over time a culture of respect and mutual admiration. The public, living in today's digital society, sees these connections on a daily basis. Meanwhile both contemporary art and modern science continue to push the limits of the imagination and of the possible. The inspiration is the same, meanwhile what is at stake continues to evolve. What remains is creative process in art and in science, creativity to undo assumptions, to approach the seemingly familiar with a new light and through this to gain a deeper understanding of the world and the human's place in it.

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